

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1 (currently amended): An apparatus for performing biological reactions comprising:

- a) a substrate comprising a first and a second surface;
- b) ~~an array of biomolecular probes positioned on said first surface; and~~ adhesive layer;
- c) a flexible layer affixed to said first surface by ~~an~~ said adhesive layer, forming a reaction volume; ~~and~~
- d) an array of biomolecular probes positioned on said first surface within said reaction volume; and
- e) at least a first port into said reaction volume; wherein said first port extends through said flexible layer;  
wherein said adhesive layer forms a water-tight bond with said first surface of said substrate and said flexible layer.

Claims 2-35 (cancelled)

Claim 36 (previously presented): An apparatus according to claim 1 wherein said biomolecular probes are oligonucleotides.

Claim 37 (cancelled)

Claim 38 (previously presented): An apparatus according to claim 1 wherein said first port extends from said second surface to said reaction volume.

Claim 39 (previously presented): An apparatus according to claim 1 wherein said substrate comprises glass.

Claim 40 (previously presented): An apparatus according to claim 1 wherein said substrate comprises a polymer.

Claim 41 (previously presented): An apparatus according to claim 1 wherein said substrate comprises ceramic.

Claim 42 (previously presented): An apparatus according to claim 1 wherein said substrate comprises silicon.

Claim 43 (previously presented): An apparatus according to claim 1 wherein said biomolecular probes are anchored to said first surface using polyacrylamide.

Claim 44 (previously presented): An apparatus according to claim 1 wherein said biomolecular probes are anchored to a continuous layer of polyacrylamide.

Claim 45 (previously presented): An apparatus according to claim 1 further comprising a heating element positioned under said reaction volume.

Claim 46 (previously presented): An apparatus according to claim 45 wherein said heating element is a resistive heater.

Claim 47 (previously presented): An apparatus according to claim 1 comprising a plurality of arrays of biomolecular probes, and said flexible layer, said adhesive layer and said first surface comprise a plurality of reaction volumes each containing one of said arrays.

Claim 48 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises plastic.

Claim 49 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises translucent plastic.

Claim 50 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises rubber.

Claim 51 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises polyester.

Claim 52 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises Teflon.

Claim 53 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises polypropylene.

Claim 54 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises polyethylene.

Claim 55 (previously presented): An apparatus according to claim 1 wherein said flexible layer comprises polyvinylidene chloride.

Claim 56 (previously presented): An apparatus according to claim 1 wherein said flexible layer is a gas permeable membrane.

Claim 57 (previously presented): An apparatus according to claim 1 further comprising a scanner.

Claim 58 (previously presented): An apparatus according to claim 1 further comprising a sample preparation chip.

Claim 59 (previously presented): An apparatus according to claim 58 wherein said first port extends from said second surface to said reaction volume and said sample preparation chip is in contact with said second surface and wherein said sample preparation chip has a port that is aligned with said first port.

Claim 60 (previously presented): An apparatus according to claim 1 further comprising a roller, wherein said roller is in contact with said flexible layer.

Claims 61-63 (cancelled)

Claim 64 (previously presented): An apparatus according to claim 1 wherein said reaction volume further comprises a water-soluble compound that is a solid at room temperature and a liquid at a second, higher temperature.